



R&D Technical Documentation

Revision	Modified		Checked		Module Name
	Date	By	Date	By	
A	15 Jan 2019	GWH			WFA-1
A1	20 Mar 2019	PTI			
A2	28 Mar 2019	PTI			
					Description
					2.4 GHz auto-switching bidirectional amplifier
					Remarks
					USERS MANUAL
					Item Number

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2. CONNECTION DIAGRAM

The connections to and from WFA-1 are shown below. The radio (RADIO) and antenna (ANT) connections are labeled on the shield also.

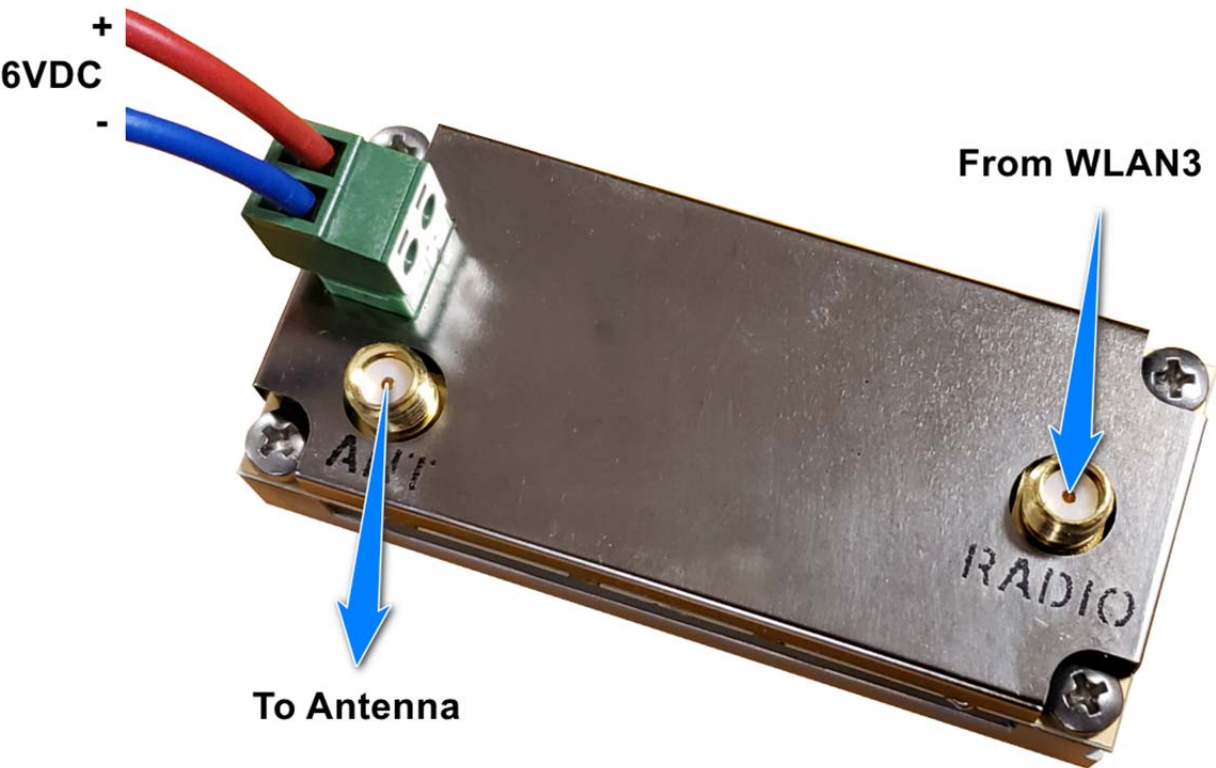


Figure 1: WFA-1 Connection Diagram

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3. CONNECTION NOTES

3.1. DC Power Connections

0.52 mm² (20 AWG), or greater wire is required to deliver DC power to the WFA-1. Using smaller wire may degrade the performance of the device.

3.2. Antenna Connections

As with any RF amplifier, do not operate the WFA-1 without an antenna or 50 ohm resistive dummy load connected to the antenna socket. Doing so may damage the device.



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4. **LABEL AND USER MANUAL REQUIREMENTS**

Equipment containing this device shall be labeled externally, stating that it contains equipment with FCC ID and IC ID numbers for this device. See below.

Contains FCC ID: LW9-WFA1 IC: 2119B-WFA1
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The model number must also appear on the external label and be preceded by either ‘Model’ or ‘M/N’ followed by WFA-1.

Include the following statements in operator and installation literature.

FCC Interference Statement (Part 15.105 (b))

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Part 15 Clause 15.21

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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FCC Part 15.19(a)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

ISED RSS-Gen Notice:

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference; and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

1) l'appareil ne doit pas produire de brouillage; 2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement."

Note: Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Note: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 30cm from all persons. The antenna(s) used for this transmitter must not transmit simultaneously with any other antenna or transmitter, except in accordance with FCC and IC multi-transmitter product procedures.

Note: Under Industry Canada regulations, this radio transmitter may only operate using an antenna of the same type and equal or lesser gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

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Remarque : L'opération est soumise à deux conditions suivantes: (1) ce dispositif ne peut pas causer de brouillage, et (2) ce dispositif doit accepter toute interférence, y compris le brouillage qui peut causer l'interférence de fonctionnement du dispositif.

Remarque : L'utilisateur est averti que les changements ou modifications non expressément approuvés par la partie responsable de la conformité pourraient annuler l'autorisation de l'utilisateur à faire fonctionner l'équipement.

Remarque : L'utilisation utilisée pour cet émetteur doit être installée pour fournir une distance de séparation d'au moins 30 cm de toutes les personnes. L'utilisation utilisée pour cet émetteur ne doit pas transmettre simultanément avec une autre antenne ou émetteur, sauf conformément aux procédures de produits multi-transmission de FAC et IC.

FCC, For General Public Uncontrolled Use:

This device is suitable for general public environments with the spacing distance of 30 cm maintained when using the 5 dBi gain antenna. Co-location with another antenna/transmitter is not allowed.

ISED, For Controlled Environment Use:

When used with the high gain antenna (5 dBi) the 30 cm spacing requirement must be observed for service and installation staff to avoid unsafe exposure. The typical installation for this antenna is optimally at heights beyond the reach of the general public or most employees. However, when service technicians or others are working around the antenna, ensure the 30 cm spacing is maintained or shut down the system to stop the transmitters from operating.

Lorsqu'il est utilisé avec l'antenne à gain élevé (5 dBi), l'exigence d'espacement de 30 cm doit être respectée pour le personnel de service et d'installation afin d'éviter toute exposition dangereuse. L'installation typique de cette antenne est optimale à des hauteurs hors de portée du grand public ou de la plupart des employés. Cependant, lorsque des techniciens de service ou d'autres personnes travaillent autour de l'antenne, assurez-vous que l'espacement de 30 cm est maintenu ou l'arrêt du système pour empêcher les émetteurs de fonctionner.

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5. **FIRMWARE**

1. None

6. **ATTACHMENTS**

2. None

7. **APPROVAL & COMPLIANCE**

7.1. Compliance

FCCID: LW9-WFA1

ICID: 2119B-WFA1

7.2. Approved WLAN modules

Only the following WLAN RF modules may be used in conjunction with the WFA-1.

Using any other RF module will void the certification.

1. Hetronic WLAN3 (based upon WL1837MOD from Texas Instruments).

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7.3. Approved Antennas

Only the following antennas may be used in conjunction with the WFA-1.

Using any other antenna may void the certification.

1. Hetronic 2.4 GHz antenna, 56506605

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